

## Kritik Travma Hastasında Rejyonel Anestezi ve Ağrı Yönetimi

Sevil ÇETİNBAŞ<sup>1</sup>

Travma; tüm yaş gruplarında önemli bir sağlık sorunu, 1-44 yaş grubu için önde gelen ölüm nedeni ve tüm yaş grupları için kalp hastalıkları ve maligniteden sonra 3. önemli ölüm nedenidir (1). Travmaya bağlı ağrı sıklıkla şiddetlidir ancak travma hastalarında çoğunlukla yetersiz ağrı tedavisi uygulanır.

Akut yaralanmış hastada ağrı yönetimi zor olabilir. Travma hastasında, yaşamı tehdit eden yaralanmaların değerlendirilmesi, resüsitasyonu ve tedavisi en önemli önceliklerdir ve yeterli analjezi sağlanması genellikle hasta stabil olana kadar ertelenmektedir. Bununla birlikte, yaralanmaya bağlı ağrının yeterince tedavi edilmediğine dair kanıtlar giderek artmaktadır (2). Travma hastaları için etkili analjezinin önünde birçok engel vardır. Klinisyenler, hemodinamik instabilite veya solunum depresyonu ve hava yolu bozulmasına neden olma korkusuyla travma hastalarında ağrı tedavilerini (özellikle sistemik opioidler) uygulama konusunda isteksizdir.

Avustralya da, 36 acil servis merkezini kapsayan bir çalışmada; kalça kırığı ile başvuran hastaların (n=645) kırıkla ilgili ağrılarının ilk tedavisine kadar ortalama sürenin 126 dakika olduğu tesbit edilmiştir (3). Bildirilen engeller arasında konfüzyon, demans, kafa travması, hipotansiyon, hasta reddi, dil ve iletişim sorunları vardır.

Acil serviste ağırlıklı olarak; ekstremitte yaralanmaları ile başvuran hastalar arasında yapılan başka bir çalışmada; başvuru sırasında %91 hastada ağrı olmasına rağmen; %86 hastanın taburcu olduktan sonra hala ağrısının olduğu ortaya konmuştur (4). Bu veriler, travma hastalarında hatta yaralanmaları hayati tehlike oluşturmayan hastalarda bile ağrının yaygın olarak yetersiz tedavi edildiğini göstermektedir.

Travmada uygulanacak ağrı tedavisi;

1. Basit ve ucuz olmalıdır
2. Güvenilir ve uzun etkili olmalıdır

<sup>1</sup> Uzm. Dr., Çanakkale Mehmet Akif Ersoy Devlet hastanesi, Anestezi ve Reanimasyon, sevilc2007@gmail.com

## 10. Lomber pleksus bloğu

Kalça kırığının açık redüksiyon internal fiksasyonu (61)

Total kalça ve diz artroplastisi sonrası ağrı yönetimi (62)

Alt ekstremitenin proksimal parçasının anestezisi ve analjezisi (63)

## 11. Siyatik sinir bloğu

Ayak cerrahisi (64)

Bacak amputasyonu (65)

## 12. Femoral sinir bloğu

Acilde diafiz ya da distal femoral kırıklar için analjezi (66)

Major diz cerrahisi (67)

Çocuklarda femur kırığı (68)

Patella kırığı

Ciddi diz travmasının prelinik yönetimi (69)

## 13. Medial ya da Lateral kutanöz antebrakiyal sinir bloğu

## 14. Lateral femoral kutanöz sinir bloğu

Diz üstü amputasyonda femoral, siyatik, obturator ve lateral kutanöz sinir kombinasyonu (70)

## 15. Uyluğun posterior kutanöz siniri

## 16. Safen sinir bloğu

Ayak ve ayak bileği cerrahi ve analjezisi (71)

## 17. Ayak bileği bloğu

Ayak bileği kırıkları cerrahisi ve analjezisi (72)

3. Holdgate A, Shepherd SA, Huckson S. Patterns of analgesia for fractured neck of femur in Australian emergency departments. *Emerg Med Australas.* 2010;22(1):3-8.( PubMed)
4. Berben Ssa,Meijs THJM, van Dongen RTM, et al. Pain prevalence and pain relief in trauma patients in the Accident and Emrgency department. *İnjury.* 2008; 39(5):578-585.( PubMed)
5. Choi JJ, Lin E, Gadsden J. Regional anesthesia for trauma outside the operating theatre. *Curr Opin Anaesthesiol.* 2013;26(4):495-500.( PubMed)
6. Elvir- Lazo OL, White PF. The role of multimodal analgesia in pain management after ambulatory surgery. *Curr Opin Anaesthesiol.*2010,23(6):697-703 (PubMed)
7. Kehlet H, Dahl JB. The value of multimodal or balanced analgesia in postoperative pain treatment. *Anesth Analg.* 1993;77(5): 1048-1056. (PubMed)
8. Banerjee M, Bouillon B, Shafizadeh S, et al. Epidemiology of extremity injuries in multiple trauma patients. *İnjury.* 2013;44(8):1015-1021.( PubMed)
9. Wathen JE, Gao D, Merritt G, Georgopoulos G, Battan FK. A randomized controlled trial comparing a fascia iliaca compartment nerve block to a traditional systemic analgesic for femur fractures in a pediatric emergency department. *Ann Emerg Med.* 2007;50(2): 162-171. ( PubMed)
10. Tezel O, Kalirim U, Bilgic S, et al. A comparison of suprascapular nerve blok and procedural sedation analgesia in shoulder dislocation reduction. *Am J Emerg Med.*2014;32(6):549-552. (PubMed)
11. Capdevila X, Pirat P, Bringuier S, et al. Continuous peripheral nerve blocks in hospital wards after orthopedic surgery : a multicenter prospective analysis of the quality of postoperative analgesia and complications in 1,416 patients. *Anesthesiology.* 2005; 103(5):1035-1045 ( PubMed)
12. Plunkett AR, Buckenmaier CC., Safety of multiple, simultaneous continuous peripheral nerve block catheters in a patient receiving therapeutic low molecular weight heparin. *Pain Med.* 2008;9(5):624-627 ( PubMed)
13. Bleckner LL, Bina S, Kwon KH, Mc Knight G, Dragovich A, Buckenmaier CC., 3 rd Serum ropivacaine concentrations and systemic local anesthetic toxicity in trauma patients receiving long term continuous peripheral nerve block catheters. *Anesth Analg.* 2010;110(2): 630-634 ( PubMed)
14. Radresa O, Chauny J-M, Lavigne G, Piette E, Paquet J, Daoust R. Current views on acute to chronic pain transition in post traumatic patients : risk factors and potential for pre -emptive treatments. *J Trauma Acute Care Surg.* 2014;76(4): 1142-1150. ( PubMed)
15. Clay FJ, Watson WL, Newstead SV, McClure RJ . A systematic review early prognostic factors for persisting pain following acute orthopedic trauma. *Pain Res Manag.* 2012; 17(1): 35-44. ( PubMed)
16. Macrae WA. Chronic post- surgical pain : 10 years on. *Br J Anesth.* 2008;101(1): 77-86. ( PubMed)

## Kaynaklar

1. FastStats.( Accessed March 16, 2015) Available from: <http://www.cdc.gov/nchs/fastat/injury.htm>.
2. Jeff Gadsden, Alicia Warlick .Regional anesthesia for the trauma patient: improving patient outcomes. *Local Reg Anesth.* 2015;8:45-55.

17. Blaivas M, Adhikari S, Lander L. A prospective comparison of procedural sedation and ultrasound guided interscalene nerve block for shoulder reuention in the emergency department. *Acad Emerg Med.* 2011;18(9):922-927 ( PubMed )
18. Stone MB, Carnell J, Fischer JWJ, Herring AA, Nagdev A. Ultrasound- guided intercostal nerve blok for traumatic pneumothorax requiring tube thoracostomy. *Am J Emerg Med.* 2011; 29(6): 697 ( Pub Med)
19. Koruç S. Toraks travması; anesteziye yoğunbakım .Güra Çelik M. Editör .Travma, Anestezi ve Yoğunbakım 1. Baskı Ankara; Türkiye klinikleri 2019:32-42
20. Sharma OP, Oswanski MF, Jolly S, Lauer SK, Dressel R, Stombaugh HA. Perils of rib fractures. *Am Surg.* 2008;74(4):310-314. ( PubMed )
21. Flagel BT, Luchette FA, Reed RL, et al. Half-a-dozen ribs: the breakpoint for mortality. *Surgery* 2005; 138(4):717-723. ( PubMed )
22. Gadsden J, Kwofie K, Shastri U. Continuous intercostal versus paravertebral blockade for multiple fractured ribs. *J Trauma Acute Surg.* 2012;73(1) :293-294. (PubMed)
23. Mohta M , Verma P, Saxena AK,Sethi AK, Tyagi A, Girotra G. Prospective, randomized comparison of continuous thoracic epidural and thoracic paravertebral infusion in patients with unilateral multiple fractured ribs- a pilot study. *J Trauma.* 2009;66(4): 1096-1101. ( PubMed)
24. Karmakar MK. Thoracic paravertebral block. *Anesthesiology.* 2001;95(3):771-780. ( PubMed )
25. Murata H, Salviz EA, Chen S, Vandepitte C, Hadzic A. Case report: ultrasound- guided continuous thoracic paravertebral block for outpatient acute pain management of multilevel unilateral rib fractures. *Anesth Analg.* 2013; 116(1):225-257
26. Buckley M, Edwards H, Buuckenmaier CC, 3rd, Plunkett AR. Continuous thoracic paravertebral nerve block in a working anesthesia resident- when opioids are not an option . *Mil Med.* 2011; 176(5):578-580. ( PubMed )
27. Hwang EG, Lee Y. Effectiveness of intercostal nerve block for management of pain in rib fracture patients. *J Exerc Rehabil.* 2014; 10(4): 241-244. ( PubMed)
28. Ho AM-H, Karmakar MK, Critchley LAH. Acute pain management of patients with multiple fractured ribs : a focus on regional techniques. *Curr Opin Crit Care.* 2011; 17(4):323-327 ( PubMed)
29. Ingalls NK, Horton ZA, Bettendorf M, Frye I, Rodriguez C. Randomized, double- blind, placebo- controlled trial using lidokaine patch %5 in traumatic rib fractures. *J Am Coll Surg.* 2010; 210(2): 205-209. ( PubMed )
30. Roche JJW, Wenn RT, Sahota O, Moran CG, Effect of comorbidities and postoperative complications on mortality after hip fracture in elderly people: prospective observational cohort study. *Br Med J.* 2005; 331(7529):1374. ( PubMed)
31. Roudsari BS, Ebel BE, Corso PS, Molinari N-AM, Kopsell TD. The acute medical care costs of fall- related injuries among the US older adults. *Injury.* 2005; 36(11):1316-1322
32. Abou- Setta AM, Beaupre LA, Rashid S, et al. Comparative effectiveness of pain management interventions for hip fracture: a systematic review. *Ann Intern Med.* 2011;155(4):234-245. ( PubMed )
33. Beaudion FL, Nagdev A, Merchant RC, Becker BM. Ultrasound – guided femoral nerve blocks in elderly patients with hip fractures. *Am J Emerg Med.* 2010 ;28(1): 76-81. ( PubMed )
34. Parker MJ , Handoll HHG, Griffiths R. Anaesthesia for hip fracture surgery in adults. *Cochrane Database Syst Rev.* 2004;(4): CD 000521. ( PubMed)
35. Newman B, McCarthy L, Thomas PW, May P, Layzell M, Horn K. A comparison of pre – operative nerve stimulator- guided femoral nerve block and fascia iliaca compartment block in patients with a femoral neck fracture. *Anaesthesia.* 2013; 68(9):899-903 ( PubMed)
36. Rashid S, Vandermeer B, Abou- Setta AM, Beaupre LA, Jones CA, Dryden DM. Efficacy of supplemental peripheral nerve blockade for hip fracture surgery: multiple treatment comparison. *Can J Anaesth.* 2013;60(3):230-243. (PubMed)
37. Pedersen SJ, Borgbjerg FM, Schousboe B, et al. A comprehensive hip fracture program reduces complication rates and mortality. *J Am Geriatr Soc.* 2008;56(10); 1831-1838
38. Marcantonio ER,Flacker JM, Michaels M, Resnick NM. Delirium is independently associated with poor functional recovery after hip fracture. *J Am Geriatr Soc.* 2000;48(6): 618-624. ( PubMed )
39. Mouzopoulos G, Vasiliadis G, Lasanianos N, Nikolaras G, Morakis E, Kaminaris M. Fascia iliaca block prophylaxis for hip fracture patients at risk for delirium: a randomized placebo-controlled study. *J Orthop Traumatol.* 2009;10(3): 127-133 ( PubMed )
40. Shanahan PT .Replantation anesthesia. *Anesth Analg.* 1984; 63(8): 785-786. ( PubMed)
41. Gozlan C, Minville V, Asehounne K, Raynal P, Zetloui P, Benhamou D. Fascia iliaca blok for femoral bone fractures in prehospital medicine. *Ann Fr Anesth Reanim.* 2005; 24(6): 617-620. ( PubMed)
42. Choi DS, Atachabadian A, Brown AR. Cervical plexus block provides postoperative analgesia after clavicle surgery. *Anesth Analg.* 2005;100:1542-1543
43. Shteif M, Lesmes D, Hartman G, Ruffino S, Laster Z. The use of the superficial cervical plexus block in the drainage of submandibular and submental abscesses – an alternative for general anesthesia. *J Oral Maxillofac surg.* 2008;66: 2642-2645
44. Christiansen TG, Nielsen R. Reduction of shoulder dislocations under interscalene brachial blockade. *Arch Orthop Trauma Surg.* 1988;107: 176-177
45. Casati A, Borghi B, Fanelli G, et al. Interscalene brachial plexus anesthesia and analgesia for open shoulder surgery: a randomized, double- blinded comparison between levobupivacaine and ropivacaine. *Anesth Analg.* 2003; 96: 253-259
46. Stone MB, Price DD, Wang R. Ultrasound- guided supraclavicular block for the treatment of upper ext-

- remity fractures, dislocations, and abscesses in the ED. *Am J Emerg Med.* 2007; 25: 472-475
47. Harmon D, Frizelle HP. Supraclavicular block for day-case anaesthesia at altitude. *Anaesthesia.* 2001;56:197
  48. Gurkan Y, Hosten T, Solak M, Tokar K. Lateral sagittal infraclavicular block: clinical experience in 380 patients. *Acta Anaesthesiol Scand.* 2008;52: 26226
  49. Hadzic A, Arliss J, Kerimoğlu B, et al. A comparison of infraclavicular nerve block: versus general anesthesia for hand and wrist day- case surgeries. *Anesthesiology.* 2004; 101:127-132
  50. Fuzier R, Fourcade O, Piannezza A, Gilbert ML, Bounes V, Olivier M. A comparison between double injection axillary brachial plexus block and midhumeral block for emergency upper limb surgery. *Anesth Analg.* 2006;102:1856-1858
  51. Kjelstrup T. Transarterial block as an addition to a conventional catheter technique improves the axillary block. *Acta Anaesthesiol Scand.* 2006; 50: 112-116
  52. Woods RK, Thien FC, Abramson MJ. Dietary marine fatty acids ( fish oil ) for asthma in adults and children. *Cochrane Database Syst Rev.* 2002: CD001283
  53. Breschan C, Kraschl R, Jost R, Marhofer P, Likar R. Axillary brachial plexus block for treatment of severe forearm ischemia after arterial cannulation in an extremely low birth – weight infant. *Paediatr Anesth.* 2004; 14: 681-684
  54. Laverse JH, Bergman JJ. Wrist and digital nerve blocks. *J Fam Pract.* 1981; 13: 415-421
  55. Phelps DB, Rutherford RB, Boswick JA Jr. Control of vasospasm following trauma and microvascular surgery. *J Hand Surg Am.* 1979;4:109-117
  56. Taras JS, Behrman MJ. Continuous peripheral nerve block in replantation and revascularization. *J Reconstr Microsurg.* 1998;14:17-21
  57. Hart RG, Fernandes FA, Kutz JE. Transthecal digital blok: an underutilized. technique in the ED. *Am J Emerg Med.* 2005; 23: 340-342.
  58. Kollersbeck C, Walcher T, Gradl G, Genelin F. Clinical experiences and dosage pattern in subcutaneous single injection digital blok technique( in German ) . *Handchir Mikrochir Plast Chir.* 2004;36: 64-66
  59. Karmakar MK, Critchley LA, Ho AM, Gin T, Lee TW, Yim AP. Continuous thoracic paravertebral infusion of bupivacaine for pain management in patients with multiple fractured ribs. *Chest* 2003;123:424-431
  60. Paniagua P, Catala E, Villar Landeria JM. Successful management of pleuritic pain with thoracic paravertebral blok. *Reg Anesth Pain Med.* 2000;25:651-653
  61. Morimoto M, Kim JT, Popovic J, Jain S, Bekker A. Ultrasound- guided lumbar plexus blok for open reduction and internal fixation of hip fracture. *Pain Pract.* 2006;6:124-126
  62. Bogoch ER, Henke M, Mackenzie T, Olschewski E, Mahomed NN. Lumbar paravertebral nerve block in the management of pain after total hip and knee arthroplasty: a randomized controlled clinical trial. *J Arthroplasty.* 2002; 17:398-401
  63. Zetlaoui PJ. Block of the lumbar plexus ( in French ) . *Cah Anesthesiol.* 1994;42: 771-780
  64. Taboada Muniz M, Rodriguez J, Bermudez M, et al. Low volume and high concentration in Labat's sciatic nerve blok: a prospective , randomized comparison. *Anest Analg.* 2008;107: 2085-2088
  65. Raith C, Kolblinger C , Walch H. Combined transgluteal ischial and femoral nerve blok: retrospective data on 65 risk patients with leg amputation( in German ) . *Anaesthesist* 2008;57:555-561
  66. Muttu CE, Jensen EJ, Manka MA Jr, Anders MJ, Bone LB. Femoral nerve blok for diaphyseal and distal femoral fractures in the emergency department. Surgical technique. *J Bone Joint Surg Am.* 2008;90 Suppl:218-226
  67. Fowler SJ, Symons J, Sabato S, Myles PS. Epidural analgesia compared with peripheral nerve blockade after major knee surgery: a systemic review and meta analysis of randomized trials. *Br J Anaesth.* 2008;100:154-164
  68. Stewart B, Tundur Smith C, Teebay L, Cunliffe M, Low B. Emergency department use of a continuous femoral nerve blok for pain relief for fractured femur in children. *Emerg Med J.* 2007;24:113-114
  69. Barker R, Schiferer A, Gore C, et al. Femoral nerve blockade administered preclinically for pain relief in severe knee trauma is more feasible and effective than intravenous metamizole: a randomized controlled trial. *J Trauma.* 2008;64:1535-1538
  70. Hirabayashi Y, Hotta K, Suzuki H, Igarashi T, Saitoh K, Seo N. Combined blok of femoral, sciatic, obturator nerves and lateral cutaneous nerve blok with ropivacaine for leg amputation above the knee (in Japanese). *Masui.* 2002;51:1013-1035
  71. Singelyn FJ. Single injection applications for foot and ankle surgery. *Best Pract Res Clin Anaesthesiol.* 2002;16: 247-254.